March 12, 1835.

The Rev. PHILIP JENNINGS, D.D., Vice-President, in the Chair.

Continuation of a former paper "On the twenty-five feet Zenith Telescope, lately erected at the Royal Observatory;" by John Pond, Esq., F.R.S., Astronomer Royal.

For determining the place of any star passing the meridian near the zenith, at the Royal Observatory at Greenwich, three different methods may be employed: first, by means of the mural circles; secondly, by the zenith telescope, used alternately east and west; and lastly, by means of a small subsidiary angle, as described by the author in a former paper. The details of computations made according to each of these three methods are contained in the present paper; from which it appears that they all give results nearly identical; and that, when the observations with the two circles are made with sufficient care, the greatest error to be apprehended does not exceed the quarter of a second.

"Remarks towards establishing a Theory of the Dispersion of Light." By the Rev. Baden Powell, M.A., F.R.S., Savilian Professor of Geometry in the University of Oxford.

In an abstract of M. Cauchy's Theory of Undulations, published in the London and Edinburgh Journal of Science, the author of the present paper deduced a formula expressing precisely the relation between the length of a wave and the velocity of its propagation; and showed that this last quantity is, in fact, the same as the reciprocal of the refractive index. The author here examines, by means of this formula, the relation between the index of refraction and the length of the period, or wave, for each definite ray, throughout the whole series of numerical results which we at present possess; and the conclusion to which he arrives from this comparison, for all the substances examined by Frauenhofer, viz. for four kinds of flint glass, three of crown glass, water, solution of potash, and oil of turpentine, is that the refractive indices observed for each of the seven definite rays are related to the length of waves of the same rays, as nearly as possible according to the formula above deduced from Cauchy's theory. For all the media as yet accurately examined, therefore, the theory of undulations, as modified by that distinguished analyst, supplies at once both the law and the explanation of the phenomena of the dispersion of light.

March 19, 1835.

Sir JOHN RENNIE, Knt., Vice-President, in the Chair.

A paper was read, entitled, "Some Account of the Eruption of Vesuvius, which occurred in the month of August, 1834, extracted from the manuscript notes of the Cavaliere Monticelli, Foreign Associate of the Geological Society, and from other sources; together with a Statement of the Products of the Eruption, and of the Con-

dition of the Volcano subsequently to it." By Charles Daubeny, F.R.S., F.G.S., and Professor of Chemistry in the University of Oxford.

It appears, from the information collected by the author, that for a considerable time previously to the late eruption of Vesuvius, stones and scoriæ had been thrown up from the crater, and had accumulated into two conical masses, the largest of which was more than two hundred feet in height. On the night of the 24th of August last, after the flow of considerable currents of lava, a violent concussion took place, followed by the disappearance of both these conical hillocks, which, in the course of a single night, were apparently swallowed up within the cavities of the mountain. Fresh currents of lava continued to flow for several days subsequently, destroying about 180 houses, spreading devastation over a large tract of country, and destroying all the fish in the neighbouring ponds and lakes. After the 29th of August, no further signs of internal commotion were manifested, with the exception of the disengagement of aqueous and aëriform vapours from the crater, a phenomenon which, in a greater or less degree, is at all times observable. The author descended twice into the interior of the crater, which then presented a comparatively level surface; its sides consisting of strata of loose volcanic sand and rapilli, coated with saline incrustations of common salt, coloured red and yellow by peroxide of iron. The vapours which issued from various parts of the surface, collected and condensed by means of an alembic, introduced into the ground, were found to consist principally of steam and muriatic acid, with only a slight trace of sulphureous or sulphuric acids. From a trial with solution of barytes, the author concludes that carbonic acid was also exhaled, but neither nitrogen nor sulphuretted hydrogen appeared to form any part of the gas emitted. The steam issuing from the lava contained both free muriatic acid and also muriate of ammonia, which latter salt could not be detected in the gas from the volcano itself. The author conceives that these volatile principles are entangled in the lava, and are subsequently disengaged.

March 26, 1835.

WILLIAM THOMAS BRANDE, Esq., Vice-President, in the Chair.

"On the Temperature of some Fishes of the Genus Thunnus." By John Davy, M.D., F.R.S., Assistant Inspector of Army Hospitals.

The author had occasion to observe, many years ago, that the Bonito (*Thynnus pelamys*, Cuv.) had a temperature of 99° of Fahr. when the surrounding medium was 80° 5, and that it, therefore, constituted an exception to the generally received rule that fishes are universally cold-blooded. Having found that the gills of the common Thunny of the Mediterranean (*Thynnus vulgaris*, Cuv.) were supplied with nerves of unusual magnitude, that the heart of this latter fish was very powerful, and that its muscles were of a dark red colour, he was led to conjecture that it might, like the Bonito, be also warm-blooded; and this opinion is corroborated by the testimony of several intelligent fisher-